

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 2003

BUDGET ACTIVITY

05 - System Development and Demonstration (SDD)

PE NUMBER AND TITLE

0604735F Combat Training Ranges

PROJECT

2286

COST (\$ in Thousands)	FY 2002 Actual	FY 2003 Estimate	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	Cost to Complete	Total Cost
2286 Combat Training Range Equipment	23,393	15,713	20,383	20,555	19,358	19,826	20,366	20,632	Continuing	TBD
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0	0

In FY 2004 Combat Training Ranges includes new start efforts.

(U) A. Mission Description

Air Combat Training Systems (ACTS) provide equipment and support for Air Force units and combat training ranges to support mission test, training and evaluation of aircrews, as well as, the operational testing of weapons systems and tactics under simulated combat conditions. This program element develops the electronic, telecommunications, instrumentation equipment/systems and standards for the training ranges. Air Force ACTS are interoperable with Navy Tactical Air Combat Training System (TACTS) ranges. ACTS provide capabilities to train aircrews in air-to-air and air-to-surface combat and electronic warfare. ACTS provide real-time monitoring and control of aircraft during large force exercises and small unit training, and record events for post-mission debrief and analysis. This program funds aircraft-to-pod interfaces and software interoperability among service ranges and aircraft platforms. It developed and integrated the Nellis Air Combat Training System (NACTS) Range Security Initiative (RSI) for range/aircraft data links that supports Red Flag, Coalition Flag and USAF Fighter Weapons School training. It also funds security initiatives for the Tyndall Range. In FY03, this program funds the P5 Combat Training System (P5CTS) (formerly P4RC Plus). The P5CTS develops improved ACTS capabilities including: real-time monitoring, real-time kill notification, system security initiatives that will protect classified aircraft systems information, and no-drop weapon scoring.

This program element also funds development of range instrumentation standards that will facilitate live/virtual connectivity and standardization across all platforms to include the F/A-22 and Joint Strike Fighter (JSF). Development of a set of range instrumentation standards begins in FY04 as part of the Next-Generation Range Instrumentation (NEXRI) initiative. The NexRI initiative is using a business model approach and will produce standards that new range systems may be manufactured and integrated to that will result in interoperability of system between ranges and services. The standards will also be used to upgrade legacy systems in order to achieve a seamless, joint interoperability capability between air, ground, and live instrumentation and with virtual and constructive training networks as well.

This program element develops and upgrades advanced threat emitters. The Mini-Multiple Threat Emitter System (Mini-MUTES) Modernization program (M3P) upgrades existing equipment to simulate the latest, most lethal advanced surface-to-air threats. In FY03, the Advanced Threat Emitter System (ATES) incorporated other service requirements and evolved into the Joint Threat Emitter (JTE) system. The JTE continues the development of a comprehensive suite of threat signals for aircrew tactics and electronic combat training for simulated penetrations of hostile airspace. The JTE program will complement existing range threat simulators by emulating signals that simulate the most advanced air defense and threat radars. In FY04 the Threat Reaction Analysis Indicator System (TRAINS) will undergo

Project 2286

Page 1 of 10 Pages

Exhibit R-2 (PE 0604735F)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE February 2003
BUDGET ACTIVITY 05 - System Development and Demonstration (SDD)	PE NUMBER AND TITLE 0604735F Combat Training Ranges	PROJECT 2286

(U) **A. Mission Description Continued**
improvements to increase reliability, maintainability and availability and to increase its functional capabilities including Reactive Threats, Deceptive Analysis and Site electronic countermeasure information database capabilities. The TRAINS is an electronic combat analysis system that is paired with the Multiple Threat Emitter System (MUTES) to provide analysis of aircraft Electronic Countermeasure (ECM) responses to threat signals.

Aerial Targets are used to determine air-to-air weapons systems accuracy and reliability by developing improved aerial target systems for Air Force weapons system test and evaluation. This program element also funds development of full-scale and subscale aerial targets and target control systems. Specialized target payload subsystems are developed for requirements such as: missile scoring, electronic and infrared (IR) countermeasures, radar and IR signature augmentation, and chaff and flare dispensing. In FY04 the Air Force Subscale Aerial Target (AFSAT) program will begin to evaluate product improvement opportunities to support growth initiatives.

(U) **FY 2002 (\$ in Thousands)**

(U) \$0	Accomplishments/Planned Program
(U) \$2,337	Continued development and testing of aircraft/Pod integration for range applications and coordinating upgrades with aircraft program offices
(U) \$9,880	Began Advanced Threat Emitter System (ATES) development
(U) \$3,835	Continued interoperability improvements with existing Air Force and Navy ranges to include software, upgrades, and weapons simulation development
(U) \$3,542	Completed development of RSI effort for NACTS/Tyndall Ranges
(U) \$190	Continued Aerial Target basic operating support and system acquisition and engineering support.
(U) \$145	Continued Range Instrumentation Technical Support efforts
(U) \$3,464	Continued Combat Training Ranges (CTR) basic operating support, system acquisition, and engineering support for range and threat systems
(U) \$23,393	Total

(U) **FY 2003 (\$ in Thousands)**

(U) \$0	Accomplishments/Planned Program
(U) \$395	Begin P5 CTS (formerly P4RC Plus) system development efforts
(U) \$1,768	Continued development and testing of aircraft/Pod integration for range applications and coordinating upgrades with aircraft program offices
(U) \$2,543	Continue interoperability improvements with existing Air Force and Navy ranges to include software, upgrades, and weapons simulation development
(U) \$145	Continued Range Instrumentation Technical Support efforts
(U) \$3,414	Continued CTR basic operating support, system acquisition, and engineering support for range and threat systems

Project 2286

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)		DATE
		February 2003
BUDGET ACTIVITY	PE NUMBER AND TITLE	
05 - System Development and Demonstration (SDD)	0604735F Combat Training Ranges	
	PROJECT	
	2286	
<p>(U) <u>A. Mission Description Continued</u></p> <p>(U) <u>FY 2003 (\$ in Thousands) Continued</u></p> <p>(U) \$4,757 Continued ATES development to incorporate joint requirements and evolve to a Joint Threat Emitter (JTE) System</p> <p>(U) \$2,500 Integration of tactical information and ground tracking into the Nellis Air Combat Training System (NACTS)</p> <p>(U) \$191 Continue Aerial Target basic operating support, system acquisition, and engineering support</p> <p>(U) \$15,713 Total</p> <p>(U) <u>FY 2004 (\$ in Thousands)</u></p> <p>(U) \$0 Accomplishments /Planned Program</p> <p>(U) \$2,500 Continue P5 CTS system development efforts, funding software upgrades to include new capabilities</p> <p>(U) \$1,760 Continued development and testing of aircraft/Pod integration for range applications and coordinating upgrades with aircraft program offices</p> <p>(U) \$2,500 Begin NexRI standards development</p> <p>(U) \$3,589 Continue interoperability improvements with existing Air Force and Navy ranges to include software, upgrades, and weapons simulation development</p> <p>(U) \$155 Continue Range Instrumentation Technical Support efforts</p> <p>(U) \$2,710 Continue CTR basic operating support, system acquisition, and engineering support for range and threat systems</p> <p>(U) \$4,941 Continue Joint Threat Emitter (JTE) development to incorporate joint requirements</p> <p>(U) \$369 Begin TRAINS improvements to expand the site database distribution network to add Electronic Countermeasure equipment performance data to address hardware problems</p> <p>(U) \$1,632 Begin Air Force Subscale Aerial Target (AFSAT) Product Improvements (AFSAT PI) program. Funding will be used to evaluate product improvements to support AFSAT growth potential to satisfy objective requirements</p> <p>(U) \$227 Continue Aerial Targets basic operating support and system acquisition and engineering support</p> <p>(U) \$20,383 Total</p> <p>(U) <u>B. Budget Activity Justification</u></p> <p>This program is in budget activity 5 - Systems Development and Demonstration because the Combat Training Ranges (CTR) Program directly contributes to the effectiveness and survivability of US combat forces by developing range instrumentation and training systems to increase the effectiveness of the training spectrum from individual aircrew skill training to large-scale exercises.</p>		
Project 2286	Page 3 of 10 Pages	Exhibit R-2 (PE 0604735F)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE
										February 2003
BUDGET ACTIVITY					PE NUMBER AND TITLE					PROJECT
05 - System Development and Demonstration (SDD)					0604735F Combat Training Ranges					2286
(U)	<u>C. Program Change Summary (\$ in Thousands)</u>									
					<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>		<u>Total Cost</u>	
(U)	Previous President's Budget				25,943	13,524	20,940		TBD	
(U)	Appropriated Value				25,943	16,024				
(U)	Adjustments to Appropriated Value									
	a. Congressional/General Reductions				-257	-169				
	b. Small Business Innovative Research				-337					
	c. Omnibus or Other Above Threshold Reprogram					-142				
	d. Below Threshold Reprogram				-1,842					
	e. Rescissions				-114					
(U)	Adjustments to Budget Years Since FY 2003 PBR						-557			
(U)	Current Budget Submit/FY 2004 PBR				23,393	15,713	20,383		TBD	
(U)	<u>Significant Program Changes:</u>									
	FY03 includes \$2.500M Congressional add for integration of tactical information and ground tracking into the Nellis Air Combat Training System.									
(U)	<u>D. Other Program Funding Summary (\$ in Thousands)</u>									
		<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>Cost to</u>
		<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>
(U)	PE27428F: Appn: Other	46,337	0	0	0	0	0	0	0	0
	Procurement, AF (OPAF)									
	Program Title: Air Warfare									
	Center Nellis Range									
	Complex									
(U)	PE27604F: Appn: Other	2,992	0	0	0	0	0	0	0	0
	Procurement, AF (OPAF)									
	Program Title: Readiness									
	Training									
(U)	PE27429F: Appn: Other	60,282	40,661	20,942	18,442	18,672	18,800	19,366	19,626	Continuing
	Procurement, AF (OPAF)									
	Program Title: Combat									
Project 2286										

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)									DATE February 2003	
BUDGET ACTIVITY					PE NUMBER AND TITLE				PROJECT	
05 - System Development and Demonstration (SDD)					0604735F Combat Training Ranges				2286	
(U) D. Other Program Funding Summary (\$ in Thousands)										
	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>Cost to</u>	<u>Total Cost</u>
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>	
Training Ranges										
(U) Initial Spares	1,400	775	774	787	800	816	841	856	Continuing	TBD
(U) PE84757F: Appn: Other Procurement, AF (OPAF)	0	0	2,500	19,900	23,900	24,300	24,600	25,000	Continuing	TBD
ProgramTitle: Joint National Training Center										
(U) Total OPAF	111,011	41,436	24,216	39,129	43,372	43,916	44,807	45,481	Continuing	TBD
(U) PE27429F: Appn: Aircraft Procurement, AF(APAF),	16,943	17,258	11,929	12,321	14,037	14,522	15,295	15,551	Continuing	TBD
Program Title: Combat Training Ranges										
(U) Initial Spares	1,379	1,385	1,082	1,190	1,405	1,436	1,513	1,541	Continuing	TBD
(U) Total APAF	18,322	18,670	13,011	13,511	15,422	15,958	16,808	17,092	Continuing	TBD
(U) PE35116F: Appn: Aircraft Procurement, AF (APAF),	33,184	30,391	48,402	36,345	37,446	38,256	39,297	39,970	Continuing	TBD
Program title: Aerial Targets										
(U) Initial Spares	101	820	758	406	470	472	484	493	Continuing	TBD
(U) Rocket Motors	200	197								
(U) Electronic Attack Pods	1,147	1,174								
(U) Total APAF	34,632	32,582	49,160	36,751	37,916	38,728	39,781	40,463	Continuing	TBD
(U) E. Acquisition Strategy										
The acquisition strategy is competitive, with cost plus and fixed price contracts.										
(U) F. Schedule Profile										
	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>							

Project 2286

Page 5 of 10 Pages

Exhibit R-2 (PE 0604735F)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)										DATE February 2003			
BUDGET ACTIVITY					PE NUMBER AND TITLE					PROJECT			
05 - System Development and Demonstration (SDD)					0604735F Combat Training Ranges					2286			
(U) F. Schedule Profile Continued													
<div style="display: flex; justify-content: space-around;"> <div> <u>FY 2002</u> 1 2 3 4 1 </div> <div> <u>FY 2003</u> 2 3 4 1 </div> <div> <u>FY 2004</u> 2 3 4 </div> </div>													
(U)	NACTS Range Security Initiative (RSI)												
(U)	Contract Award							X					
(U)	NACTS Integration of Tactical Info & Ground Tracking												
(U)	Contract Award											X	
(U)	Mini-Mutes Multiple Threat Emitter (M3P) Development												
(U)	Field Testing							X					
(U)	Production Decision						*						
(U)	IOC							X					
(U)	ATES/JTE Development												
(U)	Development Contract Award												
(U)	First Article Delivery												X
(U)	Joint Service Range Software Interoperability												
(U)	Integrate A/C OFP into Control Computation Sys (CCS) Baseline							X		X			X
(U)	Tactical Airborne Subsystem Software Support Activities (On-going)				*						X		X
(U)	Weapon Sims Integration into Cntrl & Computation Sys (CCS) Baseline				*						X		X
(U)	P5CTS Development												
(U)	Contract Award							X					
(U)	Initial Pod Delivery									X			
(U)	Aircraft Integration Effort												
(U)	F-15 C/D Suite 4 Software Upgrade							X					
(U)	F-15E Suite 4+ Software Upgrade								X				
(U)	F-15 C/D Suite 5 Software Upgrade							X			X		
(U)	Begin F-16 M2.3+, M3.3+ Software Upgrade (On-going through FY03)							X					
(U)	Threat Reaction Analysis Indicator System (TRAINS)												

Project 2286

Page 6 of 10 Pages

Exhibit R-2 (PE 0604735F)

UNCLASSIFIED

RDT&E BUDGET ITEM JUSTIFICATION SHEET (R-2 Exhibit)

DATE

February 2003

BUDGET ACTIVITY

PE NUMBER AND TITLE

PROJECT

05 - System Development and Demonstration (SDD)

0604735F Combat Training Ranges

2286

(U) F. Schedule Profile Continued

<u>FY 2002</u>				<u>FY 2003</u>				<u>FY 2004</u>			
1	2	3	4	1	2	3	4	1	2	3	4
									X		

(U) Contract Start

(U) Software Delivery 1 Qtr 2005

(U) * = Completed event

(U) X = Planned event

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)								DATE			
								February 2003			
BUDGET ACTIVITY				PE NUMBER AND TITLE				PROJECT			
05 - System Development and Demonstration (SDD)				0604735F Combat Training Ranges				2286			
(U) A. Project Cost Breakdown (\$ in Thousands)											
				FY 2002		FY 2003		FY 2004			
(U) Aircraft Interface Development				2,337		1,768		1,760			
(U) ATES/JTE System Development				9,880		4,757		4,941			
(U) Continue NexRI Standard Development								2,500			
(U) Nellis Air Combat Training System (NACTS) Integration						2,500					
(U) Joint Service Interoperability Improvements				3,835		2,543		3,589			
(U) Range Instrumentation Technical Support (RITS)				145		145		155			
(U) Combat Training Ranges Program Office Support				3,464		3,414		2,710			
(U) Aerial Target Program Office Support				190		191		227			
(U) Air Force Subscale Aerial Targets (AFSAT PI)				0		0		1,632			
(U) NACTS Range Security Initiative (RSI) Development				3,542		0		0			
(U) P5CTS Development				0		395		2,500			
(U) Begin TRAINS Development				0		0		369			
(U) Total				23,393		15,713		20,383			
(U) B. Budget Acquisition History and Planning Information (\$ in Thousands)											
(U) Performing Organizations:											
Contractor or Government		Contract Method/Type		Award or Obligation		Performing Activity		Project Office		Total Prior	
Performing Activity		or Funding Vehicle		Date		EAC		EAC		to FY 2002	
								Budget FY 2002		Budget FY 2003	
								Budget FY 2004		Budget to Complete	
										Total Program	
Product Development Organizations											
Cubic Defense (NACTS)		C/CPAF/FFP		Mar 95		31,149		3,542		2,500	
Raytheon (JTCTS)		Navy Contr		Mar 95		2,500		0		0	
Sverdrup (RITS)		CPAF		Oct 00		2,385		145		145	
TBD (P5CTS)		TBD		2nd Qtr 03		0		0		395	
Harris Corp (M3P)		CPFF		May 98		380		0		0	
Modern Technologies Corp (ATES/JTE)		CPAF		4th Qtr 02		0		9,880		4,757	
								4,941		Continuing	
										TBD	
Project 2286											
Page 8 of 10 Pages											
Exhibit R-3 (PE 0604735F)											

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)							DATE February 2003		
BUDGET ACTIVITY				PE NUMBER AND TITLE				PROJECT	
05 - System Development and Demonstration (SDD)				0604735F Combat Training Ranges				2286	
(U) <u>Performing Organizations Continued:</u>									
<u>Product Development Organizations</u>									
TBD (TRAINS)	TBD	TBD		0	0	0	369	Continuing	TBD
Joint Interoperability	Navy Contract	Mar 97		3,429	3,835	2,543	3,589	Continuing	TBD
TBD (NexRI)							2,500	Continuing	TBD
Aircraft Interface	Through	Jun 96		1,035	2,337	1,768	1,760	Continuing	TBD
	MOAs with								
	ALCs &								
	Aircraft SPO								
	Contractors								
Composite Engineering Inc. (AFSAT PI)	TBD	TBD		0	0	0	1,632	Continuing	TBD
<u>Support and Management Organizations</u>									
OO/ALC/LH, Hill AFB, UT	Various			0	593	286	375	Continuing	TBD
AAC/WRR, Eglin AFB, FL	Various			8,576	2,871	3,128	2,335	Continuing	TBD
AAC/WRA, Eglin AFB, FL	Various			0	190	191	227	Continuing	TBD
NAWC, China Lake, CA	Various			113	0	0	0	0	113
<u>Test and Evaluation Organizations</u>									
AAC/WRR, Eglin AFB, FL	Various			1,405	0	0	0	Continuing	TBD
46 Test Wing, Eglin AFB FL	Various			640	0	0	0	Continuing	TBD
(U) <u>Government Furnished Property:</u>									
	<u>Contract</u>								
	<u>Method/Type</u>	<u>Award or</u>							
<u>Item</u>	<u>or Funding</u>	<u>Obligation</u>	<u>Delivery</u>	<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>	<u>Total</u>
<u>Description</u>	<u>Vehicle</u>	<u>Date</u>	<u>Date</u>	<u>to FY 2002</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>Complete</u>	<u>Program</u>
<u>Product Development Property</u>									
<u>Support and Management Property</u>									
<u>Test and Evaluation Property</u>									
Project 2286				Page 9 of 10 Pages			Exhibit R-3 (PE 0604735F)		

Project 2286

Page 9 of 10 Pages

Exhibit R-3 (PE 0604735F)

UNCLASSIFIED

RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN (R-3)					DATE February 2003	
BUDGET ACTIVITY		PE NUMBER AND TITLE				PROJECT
05 - System Development and Demonstration (SDD)		0604735F Combat Training Ranges				2286
		<u>Total Prior</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget to</u>
		<u>to FY 2002</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>Complete</u>
<u>Subtotals</u>						<u>Total</u>
Subtotal Product Development		40,878	19,739	12,108	17,446	TBD
Subtotal Support and Management		8,689	3,654	3,605	2,937	TBD
Subtotal Test and Evaluation		2,045	0	0	0	TBD
Total Project		51,612	23,393	15,713	20,383	TBD

Project 2286

Page 10 of 10 Pages

Exhibit R-3 (PE 0604735F)

UNCLASSIFIED